

Patent Application No. 09/747,850
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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A multifunctional encapsulated biologically active spherical device structure for human ingestion consisting of a core which comprises at least one dietary fiber, which core is surrounded by at least one biologically active substance, in which the core and the biologically active substance(s) are encapsulated on all sides by surrounding said core and biologically active substance(s) on all sides by with one or more shell-forming substance(s) selected from the group consisting of one or more of the following substances: monosaccharides, disaccharides, polysaccharides, emulsifiers, peptides, proteins and prebiotic substances.

2. (Currently Amended) The spherical device structure as claimed in claim 1, wherein the dietary fiber is selected from the group consisting of plant fibers, water-insoluble polysaccharides, water-soluble polysaccharides, pectins, lignin and plant gums.

3. (Currently Amended) The ~~feed component~~ spherical structure as claimed in claim 1, wherein the shell substance(s) ~~is-(are) able to form~~ s a stable complex with the core material or the biologically active substance(s) or the core material and the biologically active substance(s).

4. (Cancelled)

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5. (Currently Amended) The spherical ~~device~~ structure as claimed in claim 1, wherein the dietary fiber is selected from the group consisting of one or more of the following substances: plant fibers, water-insoluble celluloses, water-insoluble hemicelluloses, water-soluble polysaccharides, pectins, lignins and plant gums.

6. (Currently Amended) The spherical ~~device~~ structure as claimed in claim 1, wherein the biologically active substance is selected from the group consisting of one or more of the following substances: probiotic microorganisms, prebiotic substances, enzymes, nutrients, natural or synthetic secondary plant constituents and substances having antioxidant activity.

7. (Currently Amended) The ~~feed-component~~ spherical structure as claimed in claim 1, which has a spherical or polygonal shape having a mean diameter, in the unprocessed state, of from about 1 μm to about 200 μm .

8. (Currently Amended) The ~~feed-component~~ spherical structure as claimed in claim 1, wherein the core content of the food component is from about 10 to about 90% by weight.

9. (Currently Amended) The ~~feed-component~~ spherical structure as claimed in claim 1, wherein the content of the biologically active substance in the food component is from < 1% by weight to > 50% by weight.

10. (Currently Amended) The ~~feed-component~~ spherical structure as claimed in claim 1, wherein the content of shell materials in the food component is \leq 50% by weight.

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11. (Currently Amended) A process for producing a spherical device structure, said structure consisting of a core which comprises at least one dietary fiber, which core is surrounded by at least one biologically active substance, in which the core and the biologically active substance(s) are encapsulated by one or more shell-forming substance(s) selected from the group consisting of one or more of the following substances: monosaccharides, disaccharides, polysaccharides, emulsifiers, peptides, proteins and prebiotic substances as claimed in claim 4 ~~[[,]] which comprises said process comprising~~ introducing a biologically active substance or a mixture of two or more biologically active substances into a medium which comprises one or more shell-forming substances selected from the group consisting of one or more of the following substances: monosaccharides, disaccharides, polysaccharides, emulsifiers, peptides, proteins and prebiotic substances, then enriching the resultant mixture with one or more dietary fiber(s), wherein one or more substances selected from the group consisting of biologically active substance, the shell-forming substance and the dietary fiber comprises at least one solvent or at least one dispersion media, then homogeneously mixing the mixture and then producing spherical structures from the enriched medium and freeing it from solvents or dispersion media.

12. (Currently Amended) The spherical device structure as claimed in claim 1, wherein the polysaccharides are selected from the group consisting of hydrolyzed starches, microbial polysaccharides, plant polysaccharides, acidic plant gums, pectins and celluloses.

13. (Currently Amended) The spherical device structure as claimed in claim 2, wherein the plant fiber is selected from the group consisting of wheat fibers, apple fibers and oat fibers.

14. (Currently Amended) The spherical device structure as claimed in claim 2, wherein the water-insoluble polysaccharides are celluloses.

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15. (Currently Amended) The spherical device structure as claimed in claim 5, wherein the plant fibers are selected from the group consisting of wheat fibers, oat fibers, rice dietary fibers, apple fibers and citrus fibers.

16. (Currently Amended) The spherical device structure as claimed in claim 5, wherein the water-soluble polysaccharides are selected from the group consisting of β -glucans, fructo-oligosaccharides and galactooligosaccharides.

17. (Currently Amended) The spherical device structure as claimed in claim 6, wherein the nutrients are selected from the group consisting of vitamins, minerals, trace elements and amino acids.

18. (Currently Amended) The spherical device structure as claimed in claim 6, wherein the natural or synthetic secondary plant constituents are carotenoids.

19. (Currently Amended) The spherical device structure as claimed in claim 6, wherein the substances having antioxidant activity are flavonoids.

20. (New) A multifunctional encapsulated biologically active structure consisting of a core comprising at least one dietary fiber, said core surrounded by at least one biologically active substance, said core and biologically active substance(s) surrounded on all sides by one or more shell-forming substance(s), said shell-forming substance(s) forming stable complexes with at least one of either the core or the biologically active substances.

21. (New) A multifunctional encapsulated biologically active structure according to Claim 20, wherein said biologically active substance(s) are microorganisms.

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22. (New) A multifunctional encapsulated biologically active structure according to Claim 21, wherein said microorganisms have a cell density of greater than 1×10^9 per ml CFU.

23. (New) A multifunctional encapsulated biologically active structure according to Claim 21, wherein said microorganisms are cultured within a fermentation medium and said shell-forming substances further comprise at least one component derived from the fermentation medium.

24. (New) A multifunctional encapsulated biologically active structure according to Claim 21, further comprising at least one of either an energy source or growth promoter for said microorganisms.

25. (New) A multifunctional encapsulated biologically active structure according to Claim 20, wherein said shell-forming substance comprises at least one component selected from the group consisting of gum Arabic, gelatin, pectin, maltodextrin, and carboxymethyl cellulose.